

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY

**(19) World Intellectual Property Organization
International Bureau**



**(43) International Publication Date
7 October 2004 (07.10.2004)**

PCT

(10) International Publication Number
WO 2004/084664 A3

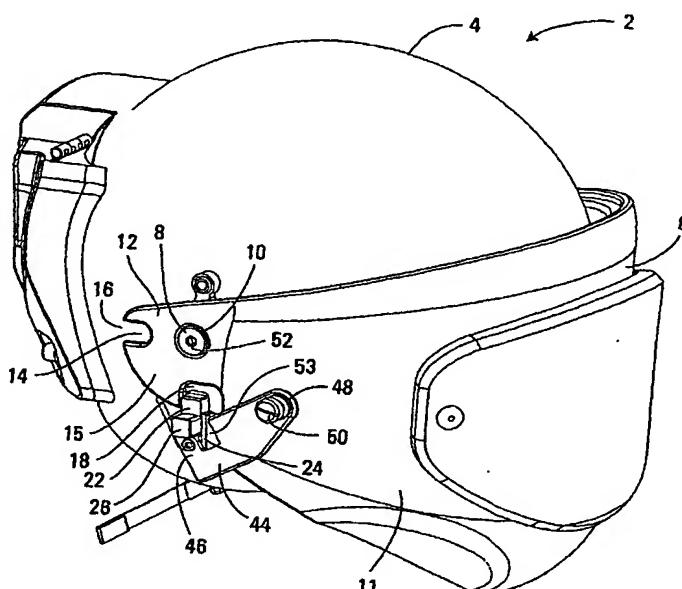
(51) International Patent Classification⁷: F41H 5/04, 1/04
(21) International Application Number:
PCT/CA2004/000444
(22) International Filing Date: 29 March 2004 (29.03.2004)
(25) Filing Language: English
(26) Publication Language: English
(30) Priority Data:
60/457,927 28 March 2003 (28.03.2003) US
60/520,641 18 November 2003 (18.11.2003) US
(71) Applicant (*for all designated States except US*):
MED-ENG SYSTEMS INC. [CA/CA]; 2400 St. Laurent
Boulevard, Ottawa, Ontario K1G 6C4 (CA).
(72) Inventors; and
(75) Inventors/Applicants (*for US only*): MAKRIS, Aristidis
[CA/CA]; 8 Gleeson Way, Ottawa, Ontario K2J 5A2
(CA). GRILLAS, Athanasios [CA/CA]; 13 Gleeson
Way, Ottawa, Ontario K2J 5A2 (CA). MITRIC, Bratislav
[CA/CA]; 604-199 Kent St., Ottawa, Ontario K2P 2K8
(CA). FISHER, Geoffrey [CA/CA]; 909-321 Waverley
St., Ottawa, Ontario K2P 0W2 (CA). SOBEL, Jay

[CA/CA]; 46 Summerwind Cres., Ottawa, Ontario K2G 6G5 (CA). **WHITE, Julia** [CA/CA]; 200 Blackdome Cres., Kanata, Ontario K2T 1A6 (CA). **MYLES, Justin**, E. [CA/CA]; 6100 8th Line, Carlsbad Springs, Ontario K0A 1K0 (CA). **VADEBONCOEUR, Maxime** [CA/CA]; 163 rue Dollard-des Ormeaux, Gatineau, Quebec J8X 3M8 (CA). **JAMES, Raymond** [CA/CA]; 2123 Blackcreek Rd., Edwards, Ontario K0A 1V0 (CA). **L'ABBE, Richard** [CA/CA]; 3203 Carriage Hill Place, Ottawa, ONTARIO K1T 3X2 (CA). **FARRELL, Rod** [CA/CA]; 42 Tennyson St., Ottawa, Ontario K2E 7H1 (CA). **KALAAM, Shaik** [CA/CA]; 803-2851 Baycrest Dr., Ottawa, Ontario K1V 8V7 (CA). **HEDGE, Clint** [CA/CA]; 13665 Locks Rd., RR 3, Chesterville, Ontario K0C 1H0 (CA). **BORTOT, Peter** [CA/CA]; 5427 Taylor Way, Osgood, Ontario K0A 2W0 (CA). **PFLANZ, Simon** [CA/CA]; 10146 Clark Rd., Mountain, Ontario K0E 1S0 (CA). **LECLERC, Gilles** [CA/CA]; 4 Leber, Aylmer, Quebec J9H 1C5 (CA). **PAGE, Daniel** [CA/CA]; 1409 - 158B MacArthur, Ottawa, Ontario K1L 8C9 (CA).

(74) Agents: **STONE, Olivier, A.** et al.; Smart & Biggar, P.O. Box 2999, Station D, 900 - 55 Metcalfe Street, Ottawa, Ontario K1P 5Y6 (CA).

[Continued on next page]

(54) Title: HEAD PROTECTOR



(57) Abstract: A head protection system comprises a helmet shell (4), a visor mounting (5) for pivotally mounting a visor (6) to the shell to enable the visor to be moved between raised and lowered positions, and a retainer (8) for releasably retaining the visor to the helmet. The system includes a visor adapted for mounting on the shell which comprises a substrate of transparent thermoplastic material (108) and a backing substrate (130) comprising a plurality of layers of high performance, ballistic resistant material. The system may further include a second visor which can be releasably connected to the shell using the same visor mounting and which may have a different construction and primary function.



(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK,

TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— *of inventorship (Rule 4.17(iv)) for US only*

Published:

— *with international search report*
— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) Date of publication of the international search report:

18 November 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/CA2004/000444

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 F41H5/04 F41H1/04

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 IPC 7 F41H A42B A62B G02B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 32 44 152 A (HPS-HILDEBRANDT GESELLSCHAFT FÜR KUNSTSTOFFVERARBEITUNG) 30 May 1984 (1984-05-30) page 4, line 1 - line 11	1
Y	page 5, line 19 - line 32 page 6, line 16 - line 27; claims 1-3; figures 1-8 ---	2-25, 47-61
Y	US 3 573 150 A (BROUTMAN ET AL.) 30 March 1971 (1971-03-30) abstract column 2, line 31 - line 34 column 6, line 7 - line 8; figures 1-3 ---	2-25, 47-61
		-/-

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

21 September 2004

Date of mailing of the international search report

07.10.2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Giesen, M

INTERNATIONAL SEARCH REPORT

International Application No

PCT/CA2004/000444

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 86 33 539 U (EVERS) 9 April 1987 (1987-04-09)	1
A	page 2, line 2 - line 9; claim 1; figures 1,2 ---	2-25, 47-61
X	FR 2 607 237 A (GALLET) 27 May 1988 (1988-05-27)	1
A	page 1, line 1 - line 21; figures 1,2 ---	2-25, 47-61
X	US 3 636 565 A (LUISADA ET AL.) 25 January 1972 (1972-01-25)	26-32, 35-40
Y	column 2, line 36 -column 3, line 63	33,34, 41-43, 92-98 44-46
A	figures 1-7 ---	
X	FR 2 706 257 A (GALLET) 23 December 1994 (1994-12-23)	26-32, 35-40
A	page 8, line 15 -page 10, line 2; figure 5 ---	33,34, 41-46
X	US 5 747 159 A (LABOCK) 5 May 1998 (1998-05-05)	47-50, 57-61
	column 7, line 61 -column 8, line 50; figures 8,9 ---	
X	EP 1 069 370 A (SUMINISTROS ADARO) 17 January 2001 (2001-01-17)	74-77, 87-90
Y	paragraph '0013! - paragraph '0026!; figures 1-5 ---	78, 100-113
X	DE 729 240 C (GERMANN) 11 December 1942 (1942-12-11)	74-77, 87-90, 113
	page 2, left-hand column, line 22 -right-hand column, line 63; figures 1-4 ---	
X	US 5 357 409 A (GLATT) 18 October 1994 (1994-10-18)	74,87, 113
	column 3, line 62 -column 4, line 42; figures 1,2 ---	
X	EP 0 818 156 A (BMW) 14 January 1998 (1998-01-14)	87,113, 114
Y	column 3, line 47 -column 4, line 47 figures 1,2 ---	78,88-90 80-86
X	US 4 475 248 A (L'ABBE ET AL.) 9 October 1984 (1984-10-09)	91-98
Y	column 1, line 47 -column 4, line 2	92-98, 117-121
A	figures 1,2,4 ---	100-113
		-/-

INTERNATIONAL SEARCH REPORT

International Application No
PCT/CA2004/000444

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 546 498 A (FANTIN) 15 October 1985 (1985-10-15) column 2, line 4 - line 63; figures 1-4 ---	99
X	US 6 101 916 A (PANOT ET AL.) 15 August 2000 (2000-08-15) column 3, line 24 -column 5, line 29; figures 1-3 ---	100-113
X	DE 200 349 C (DRÄGERWERK) 9 July 1908 (1908-07-09) the whole document ---	113,114
X	DE 31 45 106 A (BRD) 26 May 1983 (1983-05-26) page 7, line 2 - line 11; figure 3 ---	113,114
X	EP 0 412 205 A (TISSEURONT ET AL.) 13 February 1991 (1991-02-13) abstract; figures 1-6 ---	113,114
Y	US 3 082 427 A (ZBIKOWSKI) 26 March 1963 (1963-03-26) column 3, line 4 - line 9; figures 1-6 column 1, line 60 -column 2, line 35 ---	88-90
X	US 2 867 812 A (ROTH ET AL.) 13 January 1959 (1959-01-13) column 2, line 58 - line 67; figures 1,2,5 ---	117-127
X	US 4 023 210 A (HANSON) 17 May 1977 (1977-05-17) claims 1,3; figures 1-9 abstract ---	128-130
X	WO 95/10955 A (SISTEMA COMPOSITI) 27 April 1995 (1995-04-27) page 4, line 12 -page 7, line 1; figures 1-6 ---	144
A	FR 2 716 348 A (API SEPLAST) 25 August 1995 (1995-08-25) page 4, line 24 -page 5, line 34; claims 3-6; figures 1,2 ---	149,150
A	US 4 326 303 A (RAPPLEYEAE) 27 April 1982 (1982-04-27) column 2, line 34 - line 36; figure 1 ---	151
X	US 5 347 660 A (ZIDE ET AL.) 20 September 1994 (1994-09-20) the whole document ---	151
	-/-	

INTERNATIONAL SEARCH REPORT

International Application No
PCT/CA2004/000444

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 294 676 A (ARAI) 14 December 1988 (1988-12-14)	33, 34, 41-43
A	column 4, line 55 -column 5, line 53; figures 3-5 ---	44-46, 145-148
Y	DE 85 14 219 U (AIR TECHNIK) 27 June 1985 (1985-06-27) page 6, line 12 -page 7, line 22; claims 1,2,6; figures 1-5 ---	62-73
Y	GB 1 018 928 A (FRIEDER) 2 February 1966 (1966-02-02) page 3, right-hand column, line 82 - line 91; figures 1,3 page 2, right-hand column, line 90 -page 3, left-hand column, line 32 ---	62-73
Y	US 4 498 202 A (YAMAMOTO) 12 February 1985 (1985-02-12)	80-86
A	column 2, line 55 -column 4, line 54; figures 1-7 ---	78
Y	US 5 765 235 A (ARNOLD) 16 June 1998 (1998-06-16) column 3, line 52 -column 4, line 35; figure 2 column 2, line 14 - line 36 ---	80-86
A	---	79
Y	WO 95/11473 A (KOPIN) 27 April 1995 (1995-04-27) page 48, line 18 - line 23; figure 51 page 35, line 32 - line 35 ---	100-113
Y	US 4 729 132 A (FIERRO) 8 March 1988 (1988-03-08)	117-125
A	column 3, line 56 -column 4, line 43; figures 4-7 ---	74-79
Y	US 3 789 427 A (AILEO) 5 February 1974 (1974-02-05) column 9, line 35 - line 47; figures 3,4 ---	117-125
Y	US 2 184 043 A (HEILSTEDT ET AL.) 19 December 1939 (1939-12-19) page 1, right-hand column, line 3 -page 2, left-hand column, line 14; figures 1-5 ---	128-130
Y	US 6 298 498 B1 (BURNS ET AL.) 9 October 2001 (2001-10-09) column 3, line 53 -column 4, line 25; figures 1,4-8 ---	145-147
		-/-

INTERNATIONAL SEARCH REPORT

International Application No
PCT/CA2004/000444

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6 438 763 B2 (GUAY ET AL.) 27 August 2002 (2002-08-27) column 3, line 37 -column 4, line 32; figures 6,7A,7B ---	145-147
A	US 3 858 242 A (GOODING) 7 January 1975 (1975-01-07) the whole document ---	1-25, 41-43, 47-61
A	US 4 817 596 A (GALLET) 4 April 1989 (1989-04-04) column 5, line 11 - line 25; figures 8,9 ---	15
A	US 3 495 273 A (AILEO) 17 February 1970 (1970-02-17) column 4, line 70 -column 7, line 22 column 9, line 24 -column 11, line 29; figures 1-8,21-25 ---	19-24
A	US 6 012 178 A (SCHUSTER ET AL.) 11 January 2000 (2000-01-11) the whole document ---	25
A	US 4 718 127 A (RITTMANN ET AL.) 12 January 1988 (1988-01-12) column 3, line 4 -column 6, line 61; figures 1-10 ---	26-46
A	FR 2 785 505 A (SHARK) 12 May 2000 (2000-05-12) abstract; figures 1-13 ---	26-31
A	EP 1 166 666 A (KASCO BETA) 2 January 2002 (2002-01-02) paragraph '0014! - paragraph '0023!; figures 1-5 ---	26-46
A	US 2002/148032 A1 (BASSON ET AL.) 17 October 2002 (2002-10-17) paragraph '0038! - paragraph '0049!; figures 1-25 ---	26-46, 145-148
A	US 4 445 253 A (HOWEY) 1 May 1984 (1984-05-01) column 2, line 25 -column 3, line 36; figures 1-6 ---	62-73
A	DE 90 15 739 U (HARTUNG HELMETS) 28 February 1991 (1991-02-28) page 5, line 15 -page 6, line 29; figures 1-3 ---	62-73
		-/-

INTERNATIONAL SEARCH REPORT

International Application No
PCT/CA2004/000444

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2001/030630 A1 (JUNK) 18 October 2001 (2001-10-18) paragraph '0029! - paragraph '0033!; figures 1-4 paragraph '0020! - paragraph '0027! ---	74-79, 87-90, 100-114
A	GB 2 370 972 A (SMITH ET AL.) 17 July 2002 (2002-07-17) the whole document ---	79
A	US 4 047 249 A (BOOTH) 13 September 1977 (1977-09-13) column 1, line 56 - line 62; figure 2 ---	79
A	US 2 798 221 A (BAILEY ET AL.) 9 July 1957 (1957-07-09) column 3, line 8 - line 38; figure 7 ---	99
A	US 4 887 320 A (LONG ET AL.) 19 December 1989 (1989-12-19) column 4, line 59 -column 5, line 31; figure 7 ---	99
A	WO 95/28100 A (MALENOTTI) 26 October 1995 (1995-10-26) page 16, line 28 -page 17, line 23; figures 1-6B,13A,13B,13C page 7, line 8 -page 10, line 13 ---	117-125, 148
A	GB 539 577 A (BYSON APPLIANCE) 16 September 1941 (1941-09-16) page 3, left-hand column, line 25 -right-hand column, line 75; figures 1-5 page 1, right-hand column, line 78 - line 93 ---	117-125
A	EP 0 291 308 A (HONDA) 17 November 1988 (1988-11-17) column 1, line 55 -column 2, line 12; figures 3,4 ---	117-125
A,P	US 6 622 313 B1 (CHOI ET AL.) 23 September 2003 (2003-09-23) column 3, line 60 -column 6, line 43; figures 2-8 ---	148
A	FR 2 759 869 A (JCP INDUSTRIES) 28 August 1998 (1998-08-28) the whole document ---	148
A	US 6 387 477 B1 (OGURA ET AL.) 14 May 2002 (2002-05-14) ---	
		-/-

INTERNATIONAL SEARCH REPORT

International Application No
PCT/CA2004/000444

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A, P	WO 03/096832 A (WHITE WATER RESEARCH AND SAFETY INSTITUTE) 27 November 2003 (2003-11-27) ----	
A	US 5 603 117 A (HUDNER ET AL.) 18 February 1997 (1997-02-18) ----	
A	DE 94 18 835 U (LIN) 19 January 1995 (1995-01-19) ----	
A	EP 0 997 080 A (ARAI HELMET) 3 May 2000 (2000-05-03) ----	

INTERNATIONAL SEARCH REPORT

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

1-114,117-130,144-151

4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-25,47-61

A head protection system comprising a helmet shell, mounting means for pivotally mounting a visor, retaining means for retaining said visor and a visor comprising a layer of transparent material and at least one layer of ballistic resistant material.

2. Claims: 26-46,99

A helmet comprising a shell and mounting means for pivotally mounting a shield member to said shell and a locking system.

3. Claims: 62-73,144,149-151

A helmet comprising a shell and strap means.

4. Claims: 74-79,87-90,100-114

A helmet comprising a shell, an electrically powered system and a power controller.

5. Claims: 80-86

A helmet comprising a shell, a visor, a moisture reducing means treatment on the surface thereof and electrically powered means for providing ventilation.

6. Claims: 91-98

A helmet comprising a shell, a shield member, coupling means and shock absorption means.

7. Claims: 115-116

A protective helmet having a side portion which covers the ear of the user and a microphone positioned on said side portion.

8. Claims: 117-130

A head protector comprising a helmet shell having a head cavity, a liner, at least one retainer and a packing member.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

9. Claims: 131-143

A head protector comprising a helmet shell and a shield and coupling means for slidably engaging and disengaging the shield to and from the helmet.

10. Claims: 145-148

A protective system comprising a helmet and a plurality of visors.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/CA2004/000444

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
DE 3244152	A	30-05-1984	DE	3244152 A1	30-05-1984
US 3573150	A	30-03-1971	CA	923417 A1	27-03-1973
DE 8633539	U	09-04-1987	DE	8633539 U1	09-04-1987
FR 2607237	A	27-05-1988	FR	2607237 A1	27-05-1988
US 3636565	A	25-01-1972	CA	932102 A1	21-08-1973
			DE	2061600 A1	27-01-1972
			GB	1266818 A	15-03-1972
FR 2706257	A	23-12-1994	FR	2706257 A1	23-12-1994
US 5747159	A	05-05-1998	US	5229204 A	20-07-1993
			AT	172149 T	15-10-1998
			AU	3735193 A	13-09-1993
			CA	2131011 A1	02-09-1993
			CN	1077416 A	20-10-1993
			DE	69227302 D1	19-11-1998
			DE	69227302 T2	17-06-1999
			EP	0557636 A1	01-09-1993
			EP	0627988 A1	14-12-1994
			IE	922553 A1	08-09-1993
			IL	102466 A	20-11-1997
			JP	7507383 T	10-08-1995
			MX	9301114 A1	31-01-1994
			TR	27217 A	09-12-1994
			US	5372771 A	13-12-1994
			WO	9316872 A1	02-09-1993
			ZA	9301388 A	22-09-1993
EP 1069370	A	17-01-2001	ES	1039829 U1	16-01-1999
			AU	9162998 A	01-11-1999
			EP	1069370 A1	17-01-2001
			WO	9953235 A1	21-10-1999
DE 729240	C	11-12-1942	NONE		
US 5357409	A	18-10-1994	US	5758947 A	02-06-1998
EP 0818156	A	14-01-1998	DE	19628087 A1	15-01-1998
			EP	0818156 A2	14-01-1998
			JP	10053916 A	24-02-1998
US 4475248	A	09-10-1984	NONE		
US 4546498	A	15-10-1985	IT	1212639 B	30-11-1989
			AT	29650 T	15-10-1987
			DE	3373615 D1	22-10-1987
			EP	0088344 A2	14-09-1983
			ES	270683 Y	01-03-1984
			JP	58169505 A	06-10-1983
US 6101916	A	15-08-2000	FR	2758635 A1	24-07-1998
			CA	2227555 A1	22-07-1998
			DE	69804690 D1	16-05-2002
			DE	69804690 T2	14-11-2002

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/CA2004/000444

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
US 6101916	A	EP ES IL	0855571 A1 2175627 T3 122959 A	29-07-1998 16-11-2002 19-03-2001
DE 200349	C		NONE	
DE 3145106	A	26-05-1983	DE	3145106 A1
EP 0412205	A	13-02-1991	EP AT CA DE DE ES US	0412205 A1 95675 T 2023088 A1 68909934 D1 68909934 T2 2025483 A6 5119505 A
US 3082427	A	26-03-1963	NONE	
US 2867812	A	13-01-1959	NONE	
US 4023210	A	17-05-1977	NONE	
WO 9510955	A	27-04-1995	IT WO EP	1265117 B1 9510955 A2 0740512 A1
FR 2716348	A	25-08-1995	FR FR	2716348 A1 2716349 A1
US 4326303	A	27-04-1982	CA	1141103 A1
US 5347660	A	20-09-1994	NONE	
EP 0294676	A	14-12-1988	JP JP JP DE DE DE EP EP KR US	1774920 C 4033886 B 63309612 A 3864912 D1 3887171 D1 3887171 T2 0294676 A1 0420300 A2 9204855 B1 4907299 A
DE 8514219	U	27-06-1985	DE	8514219 U1
GB 1018928	A	02-02-1966	NONE	
US 4498202	A	12-02-1985	NONE	
US 5765235	A	16-06-1998	NL AT AU CA DE DE DK EP	9402012 A 178765 T 3937895 A 2206493 A1 69509130 D1 69509130 T2 802743 T3 0802743 A1
01-07-1996 15-04-1999 19-06-1996 06-06-1996 20-05-1999 09-12-1999 25-10-1999 29-10-1997				

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No.

PCT/CA2004/000444

Patent document cited in search report	Publication date		Patent family member(s)	Publication date
US 5765235	A		ES 2129867 T3 FI 972281 A GR 3030628 T3 JP 10510596 T WO 9616563 A1 NO 972332 A	16-06-1999 29-05-1997 29-10-1999 13-10-1998 06-06-1996 29-07-1997
WO 9511473	A	27-04-1995	CA 2174510 A1 EP 0724743 A1 EP 0821257 A2 JP 9504120 T US 6421031 B1 WO 9511473 A1 US 2002005819 A1 US 6452572 B1 US 2002190923 A1 US 6424321 B1 US 5815126 A US 2002163486 A1 US 2001054989 A1	27-04-1995 07-08-1996 28-01-1998 22-04-1997 16-07-2002 27-04-1995 17-01-2002 17-09-2002 19-12-2002 23-07-2002 29-09-1998 07-11-2002 27-12-2001
US 4729132	A	08-03-1988	NONE	
US 3789427	A	05-02-1974	NONE	
US 2184043	A	19-12-1939	NONE	
US 6298498	B1	09-10-2001	US 6035451 A AU 8665298 A BR 9815720 A CA 2321998 A1 DE 69818711 D1 DE 69818711 T2 EP 1061824 A1 ES 2203978 T3 JP 2002506142 T WO 9945810 A1	14-03-2000 27-09-1999 07-11-2000 16-09-1999 06-11-2003 29-04-2004 27-12-2000 16-04-2004 26-02-2002 16-09-1999
US 6438763	B2	27-12-2001	FR 2809286 A1 CA 2349764 A1 US 2001054188 A1	30-11-2001 29-11-2001 27-12-2001
US 3858242	A	07-01-1975	NONE	
US 4817596	A	04-04-1989	FR 2532552 A1 AT 18507 T CA 1211676 A1 DE 3362544 D1 EP 0105813 A1 ES 282964 U	09-03-1984 15-03-1986 23-09-1986 17-04-1986 18-04-1984 16-04-1986
US 3495273	A	17-02-1970	DE 1660730 A1 FR 1604977 A GB 1167451 A US 3748657 A	02-09-1971 26-06-1972 15-10-1969 31-07-1973
US 6012178	A	11-01-2000	DE 19613583 A1 AT 198794 T	31-10-1996 15-02-2001

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/CA2004/000444

Patent document cited in search report	Publication date		Patent family member(s)		Publication date
US 6012178	A		AU 5686096 A CA 2217445 A1 CN 1181132 A , B DE 59606345 D1 DK 820576 T3 WO 9632620 A1 EP 0820576 A1 ES 2153575 T3 IL 117791 A JP 11503512 T NO 974523 A		30-10-1996 17-10-1996 06-05-1998 22-02-2001 29-01-2001 17-10-1996 28-01-1998 01-03-2001 05-04-1998 26-03-1999 30-09-1997
US 4718127	A	12-01-1988	NONE		
FR 2785505	A	12-05-2000	FR 2785505 A1		12-05-2000
EP 1166666	A	02-01-2002	IT MI20001460 A1 EP 1166666 A1		31-12-2001 02-01-2002
US 2002148032	A1	17-10-2002	FR 2808976 A1 CA 2382804 A1 EP 1283684 A1 WO 0189332 A1 JP 2003533614 T		23-11-2001 29-11-2001 19-02-2003 29-11-2001 11-11-2003
US 4445253	A	01-05-1984	NONE		
DE 9015739	U	28-02-1991	DE 9015739 U1		28-02-1991
US 2001030630	A1	18-10-2001	DE 10018490 A1 EP 1146414 A2		29-11-2001 17-10-2001
GB 2370972	A	17-07-2002	NONE		
US 4047249	A	13-09-1977	NONE		
US 2798221	A	09-07-1957	NONE		
US 4887320	A	19-12-1989	BR 8803248 A DE 3821466 A1 IL 86642 A IT 1217931 B NL 8801515 A		31-01-1989 12-01-1989 16-09-1991 30-03-1990 01-02-1989
WO 9528100	A	26-10-1995	WO 9528100 A1 AU 6806194 A		26-10-1995 10-11-1995
GB 539577	A	16-09-1941	NONE		
EP 0291308	A	17-11-1988	JP 63183230 U DE 3873408 T2 EP 0291308 A1 US 4970729 A		25-11-1988 03-12-1992 17-11-1988 20-11-1990
US 6622313	B1	02-10-2003	KR 2003079139 A EP 1350437 A2 US 2003182717 A1		10-10-2003 08-10-2003 02-10-2003

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No PCT/CA2004/000444

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
FR 2759869	A	28-08-1998	FR	2759869 A1		28-08-1998
US 6387477	B1	14-05-2002	JP	3535410 B2		07-06-2004
			JP	11314325 A		16-11-1999
WO 03096832	A	27-11-2003	WO	03096832 A1		27-11-2003
			US	2003221245 A1		04-12-2003
US 5603117	A	18-02-1997	NONE			
DE 9418835	U	19-01-1995	DE	9418835 U1		19-01-1995
EP 0997080	A	03-05-2000	JP	3004264 B2		31-01-2000
			JP	2000136422 A		16-05-2000
			EP	0997080 A2		03-05-2000
			KR	2000028551 A		25-05-2000
			TW	539540 B		01-07-2003
			US	6308343 B1		30-10-2001